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1915

# TWELVE LESSONS

IN

# READING, WRITING, AND ARITHMETIC

DESIGNED FOR USE DURING

# MOONLIGHT SCHOOL MONTH

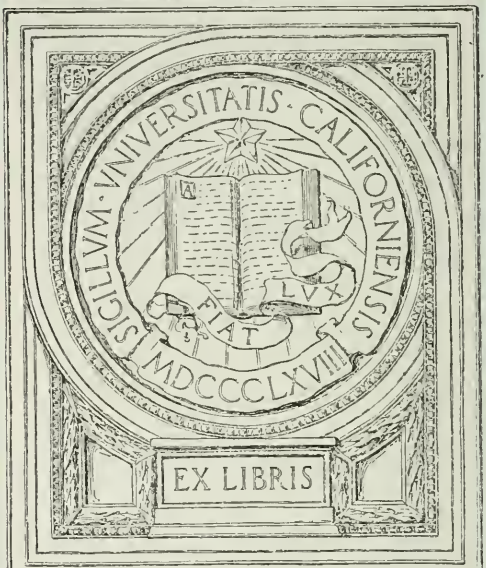
IN

# NORTH CAROLINA

TEACHERS' EDITION

ISSUED FROM THE OFFICE OF
STATE SUPERINTENDENT OF PUBLIC INSTRUCTION
RALEIGH, N. C.
1915

UNIVERSITY OF CALIFORNIA
LOS ANGELES

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IN

# READING, WRITING, AND ARITHMETIC

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# MOONLIGHT SCHOOL MONTH

IN

# NORTH CAROLINA

LOS ANGELES
STATE NORMAL SCHOOL

TEACHERS' EDITION

ISSUED FROM THE OFFICE OF
STATE SUPERINTENDENT OF PUBLIC INSTRUCTION
RALEIGH, N. C.
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## PREFACE

Grateful acknowledgment is hereby made to the members of the State Department of Education and others who have so heartily and unselfishly collaborated in the preparation of this bulletin, and sincere thanks are hereby expressed to the American Book Company and the B. F. Johnson Publishing Company for their kind permission to use in the bulletin stories from their copyrighted publications.

J. Y. Joyner,
*State Superintendent of Public Instruction.*

# MOONLIGHT SCHOOLS

## LETTER TO SUPERINTENDENTS AND TEACHERS

BY THE

**State Superintendent of Public Instruction**

*To Superintendents and Teachers:*

I have been greatly gratified and deeply touched by the enthusiastic and unselfish response of the superintendents and teachers of the State to the call to volunteer for extra service in organizing and conducting Moonlight Schools to teach our too long neglected adult illiterates to read and write. When this bulletin went to press five thousand teachers had already voluntarily pledged themselves in writing to teach without compensation for at least one month in the moonlight schools of the State. I have no doubt that if others shall be needed for the work, they too will readily respond. Such a record should make every teacher of the State prouder of his profession and should challenge the admiration, as it merits the gratitude, of every good citizen.

This is educational work the success of which is necessarily dependent mainly upon the active leadership and wise direction of superintendents and teachers. The newspapers of the State, the fraternal and civic organizations of every sort, like the Farmers' Union, the Junior Order of United American Mechanics, the Women's Clubs, have pledged their active and enthusiastic support to this commendable campaign for the reduction and elimination of illiteracy. Rally all of these agencies to your assistance in organizing and directing the moonlight schools in your counties and school districts, and especially in interesting and enrolling in your schools the men and women who can not read and write.

I beg to make the following suggestions:

### Suggestions.

1. Get from the census the names and addresses of all illiterates in the school district. With the aid of the school committee, and others well acquainted with the residents of the district, verify, and if necessary, correct and complete this list.

2. See to it that every one of them receives a sympathetic, tactful, and earnest personal invitation to attend. Select the right person to give this personal invitation to each—some neighbor, some friend, some fellow-member of church or fraternal order, some one that has the confidence and friendship of the person invited and knows how to approach him.

3. Many illiterates are naturally sensitive over their inability to read and write. Respect their feelings. Let the invitations be extended, and all the other work of the schools for them, be conducted in a spirit of sympathetic brotherhood, good fellowship and democratic equality. In word and act, avoid everything that may smack of condescension, pity, smug superiority. These are our brothers and fellow-citizens—in the

eyes of God and the State as good as we are—suffering under the handicap of illiteracy for which most of them are not responsible because in childhood they had no opportunity to go to school or had nobody in authority over them sufficiently appreciative of its importance to make them use the opportunity to go to school. It is our duty and our privilege to help them help themselves to remove this handicap for their own sake and for the State's sake, before it is forever too late. In this spirit should this work for them and with them be done.

4. By resolution adopted unanimously by the North Carolina Press Association at its recent meeting, the newspapers of the State pledged themselves to print a week in advance, the lessons in reading and arithmetic for each week and to send free to each pupil of a moonlight school in the county for a month a copy of the county paper containing these lessons. They also agreed to print weekly a brief news letter from each neighborhood in which a moonlight school is taught containing interesting items about the school and other news of the neighborhood, expressed in words and sentences comprehensible to adult beginners in reading.

The county superintendent and the teacher of each school should furnish the editor of the county paper the names and addresses of all pupils enrolled and should make arrangements with some reliable person in each district to send this letter to the paper each week. The pupils should be instructed to bring the paper with them to school each night that it may be used for reading the lessons, the news letters, and for general supplementary reading.

Bulletins containing the lessons have been printed and furnished the county superintendent for free distribution through the teachers, upon application, to each pupil of a moonlight school, but these can not take the place of the county paper. It is important that the county paper should be placed in their hands from the first to interest them, to stimulate their desire to learn to read, that they may read their home paper like other folks and keep up with what is going on in their county and in the world, to cultivate from the first the useful habit of reading their home paper, to furnish, as they begin to learn to read, an abundant supply each week of the best and most interesting material for supplementary reading. Most of them as soon as they begin to acquire the power to read, will read each week everything in the paper that they can read. Each night extracts from the paper should be read aloud to the pupils by the teacher and as soon as possible by the pupils themselves. Most of the pupils learning to read will become permanent subscribers to the county paper and keep up their practice in reading. So far as I know, North Carolina is the only State in which this cooperative plan with the county newspapers in teaching illiterates to read has been suggested or in which this generous offer has been made by the papers. I am exceedingly anxious that it shall have a fair trial because I am confident that it will contribute greatly to the success and to the permanency of this work.

5. Upon application to the State Superintendent, bulletins containing twelve lessons—three a week for four weeks—in reading, in arithmetic and in writing, prepared especially by the State Department of Public Instruction, with the aid and criticism of some of the most experienced and successful primary teachers of the State, some of whom had had

experience in teaching adults, will be furnished county superintendents in sufficient number to supply each pupil enrolled with one copy. Superintendents are urged to order at once the number needed but not to order more than will be needed.

6. Copies of the bulletin containing the lessons by weeks will also be sent to the editor of each county newspaper but the county superintendent is expected and urged to see the editor personally, explain the plan to him, and arrange for him separately by weeks, with the date of the publication of each, the lessons to be published each week.

7. The county superintendent and teacher, in coöperation with the school committee, the various community organizations and others interested, are urged to arrange some social entertainments in connection with the moonlight schools, participated in by the pupils and by other citizens, to add to the interest and happiness of the pupils, and to afford an opportunity for all to get together and for an expression of interest and encouragement from outsiders. The pupils of these schools should be made to feel at home from the first and also to feel that they are a part of the community in whom the other part of the community are deeply interested.

8. November has been designated as Moonlight School Month in North Carolina, because that seemed to be the most convenient month for the majority of the counties of the State. If, however, some other month is more convenient for your county, and the roads are in good condition, select that month. Be sure, however, to select a month when the weather is likely to be pleasant and the roads in good condition. During November or such other month as may be selected, concentrate public interest and effort upon this one work of teaching the adults of your county to read and write. Rally to the work your newspapers, all organizations that have pledged their aid and all other agencies that can be enlisted for service. Have the papers full of it every week. See that they are furnished with the facts and the news about the schools. Publish before the schools open, the number, but not the names, of adult illiterates by school districts. Publish each week the number, but not the names, of those enrolled in each school. As soon as possible, for the encouragement of others, publish from week to week the number, and by their permission, the names of those that have learned to read and write and cipher. Most of this news can be supplied weekly through the news letter from each school and should also be reported to the county superintendent by the teacher. The superintendent and the teachers should keep in close touch with the paper and see that the weekly material is promptly supplied.

9. Superintendents are urged to call a joint meeting of the County Teachers' Association and the County Committee on Community Service, consisting of the county superintendent, the county farm demonstration agent, the home demonstration agents, the president or secretary of the county Farmers' Union, editors of the county newspapers, the mayor of the county seat, one representative each of the Junior Order and of the Women's Clubs of the county, two weeks before the beginning of Moonlight School Month in the county, to ascertain the facts about the adult illiteracy of the county by districts as reported by superintendent and teachers, and to complete the organization and plans for pushing the

campaign and the work for its elimination. A suggested program for this meeting will be found in the bulletin, *Community Service and North Carolina Day,* issued by the State Department of Education.

10. The program for Community Service and North Carolina Day this year centers around the moonlight school and the elimination of illiteracy in every school district as the one most important community service to be concentrated upon this year. It is suggested that this day be observed in each county, on the Friday before the opening of the moonlight schools, and that on that day at each schoolhouse all the details for opening and successfully conducting the school be completed.

11. Because of their onerous duties in the day schools and their inadequate salaries, I did not feel that I ought to ask or that the community ought to expect of the public school teachers, more than one month's extra service at night without compensation. It is hoped and expected, however, that before the close of the month, sufficient interest will be aroused and sufficient success attained in many of the moonlight schools to warrant extending the term, and that citizens and interested organizations and orders in the community will arrange for such extension and for payment of the teacher or some other person to continue the school and also to provide, where feasible, instruction for other adults, besides illiterates, desiring additional instruction.

Very truly yours, J. Y. Joyner,
*State Superintendent of Public Instruction.*

Raleigh, N. C., October, 1915.

# LESSONS IN READING AND WRITING

NOTE—Exercises in writing will, of course, have to be furnished by the teacher in addition to the few lines of script in these lessons. These lines of script should be copied on the blackboard by the teacher, then written with pencils by the pupils on their tablets, the teacher making but little, if any, comment on "awkwardness."

The first lesson in writing should consist, perhaps, in each one writing his own name and address, if he can; if he cannot, then certainly that should be the first thing to be learned.

Some have found it best, at first, to have the pupils write each sentence of the reading lessons. It does not seem advisable, in the light of our meager experience, to spend much time, if any, drilling in preliminary "movements". A few minutes at the blackboard drawing circles and other figures with full-arm movements is, perhaps, as much of this sort of exercise as will be found helpful. It may be found best to let the grown-up make his first efforts in writing on the blackboard. All this is left to the judgment of the teacher.

## I

| | | |
|---|---|---|
| I | read | teach |
| want | can | me |
| to | you | will |

I want to read.

Can you teach me to read?

Will you teach me to read?

Will you read to me?

I will read to you.

*Teach me to read.*

## II

write

I want to write.

Can you teach me to write?

Will you teach me to write?

Will you write to me?

I will write to you.

*Teach me to write.*

## III

and my name

I can read and write.
I can read my name.
Will you write my name?
I can write my name.
I can read and write my name.

## IV

like do paper
book let Bible

Do you like to read?
I like to read and write.
I can read my book.
Let me read to you.
Let me read the paper.
I can read my Bible.

## V

live brother letter
on town he
farm

I live on the farm.
Do you live on the farm?
I like to live on the farm.
My brother lives in town.
I will write a letter to my brother.
He will read my letter.

## VI

| | | |
|---|---|---|
| we | plow | deep |
| raise | soil | plant |
| crops | | |

We raise crops on the farm.
We plow the soil deep.
We plant good seed.
We raise good crops.
Plow the soil deep.
Plant good seed.
You can raise good crops.

*Plow the soil deep and plant good seed*

## VII

| | | |
|---|---|---|
| our | mother | flowers |
| home | keeps | neat |
| is | fruit | clean |

Our home is on the farm.
It is a good home.
We like our home.
We have fruit and flowers.
Mother keeps our home neat and clean.

*Mother keeps our house neat and clean.*

## VIII

| | | |
|---|---|---|
| school | have | help |
| must | teacher | house |

We want a good school.
We must have a good teacher.
A good school will help me and my brother.
We like our school.
We like our teacher.
We keep our schoolhouse neat and clean.

*We keep our schoolhouse neat and clean*

## IX

| | | |
|---|---|---|
| roads | cost | less |
| community | bad | than |
| church | | |

We want good roads.

Good roads will help our community.

We want a good road to school.

We want a good road to church.

We want a good road to town.

Our community must have good roads and a good school.

Good roads cost our community less than bad roads.

Good roads cost less than bad roads.

## X

| | | |
|---|---|---|
| well | bodies | cleanliness |
| long | eat | next |
| be | food | godliness |
| happy | | |

Keep well and you will live long.

Keep well and you will be happy.

Keep clean and you will keep well.

To keep well:

we must keep our bodies clean,

we must keep our homes clean,

we must keep our community clean,

we must eat clean food.

"Cleanliness is next to godliness."

Cleanliness is nextt to godliness

## XI

| | | |
|---|---|---|
| citizen | its | thee |
| also | flag | liberty |
| State | of | sing |
| country | | |

I must be a good citizen.

A good citizen loves his community.

He also loves his State.

A good citizen loves his country and respects its flag.

"My Country, 'tis of thee,
Sweet land of liberty,
Of thee I sing."

*A good citizen loves his country.*

## XII

Blessed are the poor in spirit: for theirs is the kingdom of heaven.

Blessed are they that mourn: for they shall be comforted.

Blessed are the meek: for they shall inherit the earth.

Blessed are they which do hunger and thirst after righteousness: for they shall be filled.

Blessed are the merciful: for they shall obtain mercy.

Blessed are the pure in heart: for they shall see God.

Blessed are the peacemakers: for they shall be called the children of God.—*Matt.* V.

*"Blessed are the peacemakers: for they shall be called the children of God"*

## TEACHING SOME COMMON SOUNDS, EAR TRAINING

### EXERCISE I

NOTE. Let the teacher spell by sound the following words, pausing at the end of each word for its pronunciation by the class.

| | | | | |
|---|---|---|---|---|
| no | low | see | bee | lay |
| go | row | Lee | bay | may |
| Joe | bow | we | day | nay |
| so | mow | ye | gay | pay |
| hoe | me | fee | jay | say |
| toe | he | tea | hay | ray |

NOTE. Let the teacher now have the class spell the above words by sound. The teacher should pronounce each word slowly and then have the class give in concert and singly the several sounds of the word and finally pronounce the word distinctly after it has been spelled. The following thirteen exercises should be treated in the same manner as the above exercise. About fifteen minutes should be devoted to each one of these exercises, using one each night.

### EXERCISE II

| | | | | |
|---|---|---|---|---|
| by | high | pie | few | new |
| sigh | he | rye | hew | pew |
| die | my | tie | Jew | view |
| guy | nigh | dew | mew | cat |

### EXERCISE III

| | | | | |
|---|---|---|---|---|
| pat | bat | hat | gap | dab |
| sat | rat | cap | lap | cab |
| mat | cat | sap | nap | gab |
| fat | vat | tap | map | cats |

### EXERCISE IV (Review)

| | | | | |
|---|---|---|---|---|
| hoe | my | ray | row | mew |
| see | toe | vat | few | Joe |
| die | hat | tie | cab | tea |
| dew | fat | pew | mat | lie |
| sat | new | say | by | sap |

### EXERCISE V

| | | | | |
|---|---|---|---|---|
| mad | had | hag | gag | pan |
| lad | mag | jag | sag | man |
| pad | tag | nag | tan | fan |
| sad | bag | rag | can | Dan |
| bad | fag | wag | ran | Nan |

### EXERCISE VI (Review)

| | | | | |
|---|---|---|---|---|
| Joe | wag | bad | fag | Tea |
| Nat | Nan | new | my | cats |
| pad | we | can | rat | hats |
| Jew | ye | sat | man | pads |
| mow | tan | rap | high | rats |

### EXERCISE VII

| | | | | |
|---|---|---|---|---|
| dam | jam | lot | lots | hot |
| Sam | tax | sot | jot | not |
| ram | Max | rot | dot | top |
| ham | wax | pot | cot | pop |
| hams | rams | pots | dots | got |

### EXERCISE VIII

| | | | | |
|---|---|---|---|---|
| pod | bob | rob | fog | jobs |
| rod | sob | fob | jog | on |
| sod | cob | dog | pods | fogs |
| nod | mob | log | sobs | rods |
| God | job | hog | mob | nods |

### EXERCISE IX (Review)

| | | | | |
|---|---|---|---|---|
| ham | high | mad | ray | gag |
| rod | new | hat | vat | rob |
| rat | hat | map | tax | bad |
| sot | log | Nan | wax | we |
| man | nod | can | tan | pats |

### EXERCISE X

| | | | | |
|---|---|---|---|---|
| nut | tug | hug | gum | gun |
| hut | hub | jug | hum | run |
| cut | bug | tug | sum | bun |
| but | pug | dug | rum | fun |
| rut | nuts | rug | sun | suns |

### EXERCISE XI

| | | | | |
|---|---|---|---|---|
| let | wet | Ned | web | lit |
| met | net | bed | hit | sit |
| get | pet | fed | fit | wit |
| bet | yet | led | pit | beds |
| set | yes | wed | bit | hits |

### EXERCISE XII

| | | | | |
|---|---|---|---|---|
| tin | kin | Tim | bid | big |
| pin | win | Jim | lid | pig |
| fin | him | rib | did | fig |
| sin | dim | bib | hid | jig |
| bin | rim | fib | kid | dig |

## EXERCISE XIII

| | | | | |
|---|---|---|---|---|
| gig | hip | hull | yell | fill |
| rig | dip | gull | well | mill |
| lip | sip | dell | sell | pill |
| tip | nip | fell | bell | rill |
| rip | dull | tell | Nell | sill |

## EXERCISE XIV (Review)

| | | | | |
|---|---|---|---|---|
| nigh | fan | tub | gag | we |
| tea | hit | gum | well | yes |
| nut | vat | yet | hull | wax |
| dig | fun | Ned | yell | mob |
| sod | wit | run | sun | did |
| mow | tax | rid | bug | well |

# STORIES FOR READING

NOTE.—The following Fables have been read in "Webster's Blue Back Speller" and enjoyed by so many generations, that they deserve to be considered a part of the folk-lore of the United States. We feel sure that our grown-up friends of the moonlight schools will enjoy reading them for themselves, and will appreciate the kindness of the publishers in permitting us to print them in this bulletin.

## THE BOY THAT STOLE APPLES

(From Webster's Elementary Spelling Book, copyright 1880 and 1908 by G. and C. Merriam. Reprinted by arrangement with the American Book Company, publishers.)

An old man found a rude boy upon one of his trees stealing apples, and desired him to come down; but the young saucebox told him plainly he would not. "Won't you?" said the old man, "then I will fetch you down"; so he pulled up some turf or grass and threw at him; but this only made the youngster laugh, to think the old man should pretend to beat him down from the tree with grass only.

"Well, well," said the old man, "if neither words nor grass will do, I must try what virtue there is in stones"; so the old man pelted him heartily with stones, which soon made the young chap hasten down from the tree and beg the old man's pardon.

## THE COUNTRY MAID AND HER MILK PAIL

(From Webster's Elementary Spelling Book, copyright 1880 and 1908 by G. and C. Merriam. Reprinted by arrangement with the American Book Company, publishers.)

A country maid was walking very deliberately with a pail of milk upon her head, when she fell into the following train of reflections: "The money for which I shall sell this milk will enable me to increase my stock of eggs to three hundred. These eggs, allowing for what may prove addle, and what may be destroyed by vermin, will produce at least two hundred and fifty chickens. The chickens will be fit to carry to market about Christmas, when poultry always bears a good price; so that by May Day I can not fail of having money enough to purchase a new gown. Green!—let me consider—yes, green becomes my complexion best, and green it shall be. In this dress I will go to the fair, where all the young fellows will strive to have me for a partner; but I shall perhaps refuse every one of them, and, with an air of disdain, toss from them." Transported with this triumphant thought, she could not forbear acting with her head what thus passed in her imagination, when down came the pail of milk, and with it all her imaginary happiness.

## THE TWO DOGS

(From Webster's Elementary Spelling Book, copyright 1880 and 1908 by G. and C. Merriam. Reprinted by arrangement with the American Book Company, publishers.)

A good-natured Spaniel overtook a surly Mastiff, as he was traveling upon the highroad. Tray, although an entire stranger to Tiger, very

civilly accosted him; and if it would be no interruption, he said, he should be glad to bear him company on his way. Tiger, who happened not to be altogether in so growling a mood as usual, accepted the proposal; and they very amicably pursued their journey together. In the midst of their conversation, they arrived at the next village, where Tiger began to display his malignant disposition, by an unprovoked attack upon every dog he met. The villagers immediately sallied forth with great indignation to rescue their respective favorites; and falling upon our two friends, without distinction or mercy, poor Tray was most cruelly treated, for no other reason than his being found in bad company.

### THE PARTIAL JUDGE

(From Webster's Elementary Spelling Book, copyright 1880 and 1908 by G. and C. Merriam. Reprinted by arrangement with the American Book Company, publishers.)

A farmer came to a neighboring lawyer, expressing great concern for an accident which he said had just happened. "One of your oxen," continued he, "has been gored by an unlucky bull of mine, and I should be glad to know how I am to make you reparation." "Thou art a very honest fellow," replied the lawyer, "and wilt not think it unreasonable that I expect one of thy oxen in return." "It is no more than justice," quoth the farmer, "to be sure; but what did I say?—I mistake—it is *your* bull that has killed one of *my* oxen." "Indeed!" says the lawyer, "that alters the case: I must inquire into the affair; and if—" "And *if!*" said the farmer; "the business I find would have been concluded without an *if,* had you been as ready to do justice to others as to exact it from them."

### THE MICE AND THE CAT

(Courtesy B. F. Johnson Publishing Co., from Graded Classics. Copyright.)

An old cat was fast killing all the mice in a house. The mice met one night to see what they could do to make the cat leave the house. Each mouse would get up and tell of some way. A little mouse said, "I will tell you what to do; hang a bell on the cat so we can know when she is coming and get out of her way."

"Good, good!" said the mice, and some of them began to dance, and some ran to get a bell.

"Now who will hang the bell on the cat?" said an old mouse.

"Not I, not I," said all the mice at once.

### THE LARK AND THE FARMER

(Courtesy B. F. Johnson Publishing Co., from Graded Classics. Copyright.)

A meadow-lark built her nest in a field of wheat. She had a happy time raising her family, for no one came near her nest.

There were four little larks in her family, and they were now nearly large enough to fly.

The wheat was ripe and the mother knew that men might come to the field any day to reap; so she said to her little ones, "I am going out to get your breakfast. You must keep your ears and eyes wide open while I am gone; if you see or hear anything strange, you must tell me about it when I come back."

"All right, mother," said the young larks, "we shall do as you tell us."

The mother had been gone but a few minutes when the farmer who owned the field and his son came out to look at the wheat.

"This grain is ready to cut," said the farmer to his son. "This evening go to our neighbor, Mr. White, and ask him to cut it for us tomorrow."

The little larks were much frightened. They could hardly wait for their mother to get home.

"Oh, mother!" they called out as soon as they saw her; "do take us away from this field. The farmer has sent for Mr. White to cut this wheat tomorrow."

"If that is so," said the mother, "you need have no fear. If he waits for his neighbor to do his work, his wheat will not be cut."

Late the next afternoon while the mother lark was away, the farmer and his son came to the field again.

"Did you ask Mr. White to reap the grain?" said the farmer.

"Yes," replied his son, "and he promised to come."

"But he has not come," said the farmer, "and it is so late that I know he will not come today. The wheat will spoil if it is not cut. If our neighbors will not help us, we shall have to call upon our relatives. Go out this afternoon and ask your Uncle John and his sons to cut the wheat for us tomorrow."

As soon as the mother came home, the little birds said, "The wheat will surely be cut tomorrow, for the farmer has sent for his relatives to cut it. Please take us away tonight, mother."

"Don't worry," said the mother; "there is no danger so long as the farmer waits for his relatives to do the work. We will stay right here tonight."

About noon the next day, the farmer and his son came to the field again. "This grain is still standing," said the father. "I told you to get your Uncle John and his sons to cut it today. Why has nothing been done?"

"I called upon them and asked them to cut the wheat. They said that they would be here this morning. I do not know why they did not come.

"This grain must not stand another day," said the farmer. "It is shelling out now. You and I will come out here early tomorrow and cut it ourselves."

When the mother lark heard that the farmer had made up his mind to cut the wheat himself, she said to her little ones, "Get ready to fly away. If the farmer is to do the work himself, it will be done at once."

# ARITHMETIC

## Purpose of the Outline

The purpose of this outline is two-fold: (1) To indicate the amount of work to be undertaken on each of the twelve nights set apart for this work; and (2) To suggest in a very general way a method of doing the work. As those to be taught are more or less mature in mind, and understand fairly well the meaning of tens, hundreds, and thousands, it will be unnecessary to use the same amount of detail in developing these number ideas through the use of objects that would be necessary in teaching children number ideas in the lower grades. Therefore the first and the most natural step will be taken in teaching the class to write the figures for the number ideas they are already familiar with.

### LESSON I

(1) By a few definite questions find what the class already knows about writing numbers, and begin where their knowledge of writing numbers ends. Do not waste the time of class in having them spend unnecessary time in writing numbers they already know how to write accurately.

If your tests show that class can write to 10 with accuracy and rapidity, then call out and have class write either on their tablet or on the blackboard different numbers from 1 to 100. Five or six minutes will be long enough to make this test. If class can write any number from 1 to 100 with accuracy and rapidity, then call out and have class write either on their tablet or blackboard different numbers from 100 to 1,000. Continue in this way till you reach the limit of their knowledge of writing numbers. As soon as you reach the limit of their understanding in writing numbers, then begin, and lay the foundation carefully for further work. If, however, your first tests show that the pupils do not know how to write accurately the numbers from zero to 9, then your starting point will be to teach the class to write numbers from zero to 9.

(2) *Writing Numbers from Zero to 9.* Teacher: I am going to write the figure 1 on the board, and ask you to notice how I write it. Now all copy this on your tablet (or have them write it on the blackboard). Continue in this way to 9. As you proceed, examine the work of your pupils to see that they are writing the figures accurately and neatly.

(3) *Writing the Number 10.* Teacher holds up 1 bundle of ten splints in her left hand. How many splints in my left hand? Ten ones or 1 ten. How many splints in my right hand? How many ones or units in my right hand? How shall we write 1 ten and no ones or units? Write on the board the figure that stands for the number of tens in my left hand, write to the right of this figure the figure that stands for no ones or units. I am going to write the number 10 and ask you to notice how I write it. What stands for the number ones or units? What stands for the 1 ten? Write on your tablet 1 ten, and no units, or the number 10.

(4) *Writing by 10's to 90.* If the class clearly understands how to write 1 ten and no units, they may now be able to write accurately and rapidly 2 tens and no units, or 20; three tens and no units or 30—to nine tens and no units or 90, and may be able to do this without the use of splints. Give them a chance to write these numbers for themselves.

(5) *Writing Numbers from 1 to 99.* Teacher holds up 1 ten bundle of splints in her left hand and 8 splints in her right hand. How many ones or units in my right hand? What number is 1 ten and 8 ones? How shall we write 1 ten and 8 ones, or 18? What figure shall I put down to show the number of tens in my left hand? What figure shall I put down to the right of it to show the number of ones or units in my right hand? In this number 18 what figure stands for the 8 units in my right hand? What figure stands for the 1 ten in my left hand? Write on your tablet 1 ten and 8 ones.

Have member of class hold up 1 ten and 9 ones, or 19. Have class write 19.

If the class clearly understands how to write 1 ten and 8 ones, 1 ten and 9 ones, they may now be able to write accurately and rapidly 2 tens and 8 ones, 2 tens and 9 ones, 3 tens and 8 ones, 3 tens and 9 ones—to 9 tens and 9 ones or 99.

(6) *Writing the Number 100.* Teacher holds up in her left hand ten bundles of splints with ten splints in each bundle with a rubber band around the 10 tens. How many ten bundles in this large bundle? Ten. How many tens left over? How many ones left over? What number do we call 10 tens? How shall we write 10 tens or 100? What figure shall we write to show the number of hundreds in my left hand? 1. What shall we write to the right of it to show I had no tens in my right hand? Zero. What shall I write down to the right of this to show that I had no ones or units in my right hand? I am going to write the number 100 and ask you to notice how it is written. What figure stands for the number of hundreds I had in my left hand? What shows I had no tens? What shows I had no ones or units? Have class write the number 100 on their tablet. How many figures do we have to use in writing 100? How many did we use in writing 10?

(7) *Writing Numbers by 100's to 900.* If class clearly understands how to write 1 hundred no tens and no units, they may now be able to write accurately and rapidly 2 hundreds, no tens and no units, 3 hundreds, no tens and no units—to 900.

(8) *Notation and Numeration of Numbers to 900.* How many figures do we have to use in writing hundreds? In writing the number 200 what figure shows how many hundreds we have? What figure shows we have no tens? What figure shows we have no ones? How can you always be sure you have written just the number I have asked you to write? In reading or numerating numbers where do we begin? At the right and read toward the left. In the number 200 here, what place does the first zero occupy? Units place. What place does the second, the third figure or the 2 occupy? Hundreds place. Now read this number beginning at the right and reading toward the left. No units, no tens and 2 hundreds. Look at the number 400 here, what place does the first zero occupy? The second? The 4? Now read this number

beginning at the right. No units, no tens, and 4 hundreds. Have class continue in this way reading or numerating 500, 600, 700, 800 and 900.

(9) *Writing Numbers From 100 to 999.* Call out and have class write on their tablet or blackboard several different numbers from 100 to 999 to make sure they can write any number between 100 and 999 with accuracy and rapidity. Have class write 1 hundred, no tens, and 1 unit, or 101; 2 hundreds, no tens and 1 unit, or 201; 3 hundreds, no tens, and 1 unit, or 301; 401; 501; etc. Have class write rapidly 2 hundreds, 1 ten and 1 unit, or 311, 411, 511, etc.; 2 hundreds, 2 tens, and 2 units, or 222, 322, 422, 522, etc.; 298, 398, 498, 598, 698, 798, 898, 998. Associate the writing of these numbers with a few practical problems. For example, if your bale of cotton weighs 511 pounds, how would you show this in figures?

Drill class on numerating or reading numbers they write. This habit will enable pupils to discover for themselves whether they have written the number you called.

(10) *Writing 1,000.* Suppose last spring you used one thousand pounds of guano to the acre on your tobacco land, how would you show in figures the amount used on each acre? Give them a chance to write this number for themselves. Have them numerate what they have written to see if they have written 1,000. If they seem unable to write 1,000, then it may be well to use splints. Teacher holds up bundle of splints, made of ten bundles with one hundred in each bundle, and follow the method suggested in teaching class to write 100. After teaching class to write 1,000, and after having had them write 1,000 on their tablet or blackboard, then have them count the number of figures necessary in writing 1,000. Have them compare the number used in writing 1,000 with the number used in writing 100, and in writing 10. Let them see that in going from 10 to 100 they made the bundle ten times larger, that in going from 100 to 1,000 they made the bundle ten times larger. Let them see how the increase in the size of the bundle or the number was shown by adding on another zero or cipher.

Have class numerate or read one thousand beginning at the right and reading toward the left.

**Suggestions**

(1) Your class may not do quite so much or they may do more than has been outlined for the first lesson, depending upon the knowledge and ability of the class, and the length of your lesson period. If your class can do more than has been outlined for the first lesson, then continue on in the work outlined for the second lesson. If your class cannot do the work outlined in Lesson I in one lesson period, then begin the second night where you left off the first night in Lesson I. But follow the outline of work as suggested, beginning at the point in the outline where your tests of your pupils' knowledge of writing numbers show that you must begin.

(2) At whatever point in this outline of work the needs of your class indicate that you should begin, there lay the foundation for further work carefully and thoroughly.

(3) Be sure your class understands clearly each step you take.

(4) Throw your soul into the work. Make it interesting for the class. Create an atmosphere of enthusiasm. Arouse a friendly and a

spirited competition among the members of the class in *accuracy, rapidity* and *neatness* of work.

(5) Do not allow the slow and backward pupil to become sensitive or discouraged. Have an encouraging word for him. Inspire him with confidence in himself.

(6) With the writing of different numbers associate practical problems that are common in their daily life and work on the farm and in the home, in the mill or in the store.

(7) Have a note book in which you jot down from time to time these practical problems that you wish your class to work.

(8) At the close of each lesson assign definite work for the members to do before they return on the following night.

## LESSON II

(1) Review and drill on the points that seemed difficult for class to understand on the previous night.

(2) Just where you shall begin your review on this second night, and the length of time necessary for the review, will be determined by your own judgment as to the needs of your class.

(3) But be sure to review the important steps taken on the previous night.

### New Work

(1) *Writing Numbers by 1,000 to 9,000.* Write 2,000, 3,000, 4,000, etc., to 9,000.

Drill class on numerating or reading numbers from right to left.

(2) *Writing Numbers from 1,000 to 9,999.* How shall we write 1 thousand, no hundreds, no tens and 1 unit, or one thousand and one? Lead them to write this number for themselves and without the use of splints if they can. After writing the number, have class numerate to make sure they have written it accurately. After they clearly understand how to write 1,001, then proceed: write on your tablet 3,001, 4,001, 5,001, 6,001, 7,001, 8,001, 9,001. Write on your tablet 2 thousands, no hundreds, 1 ten and 1 unit, or two thousand and eleven, 3,011 4,011, 5,011, 6,011, 7,011, 8,011, 9,011. Write on your tablet 2 thousands, 1 hundred, 1 ten and 1 unit or two thousand, one hundred and eleven, 3,111, 4,111, 5,111, 6,111. Write on your tablet 2 thousands, 2 hundreds, 2 tens and 2 units or two thousand, 2 hundred and twenty-two, 3,222, 4,222, 5,222, 6,222, 7,222, 8,222, 9,222, etc.

Have class write population of the following cities as given in the census of 1910: Elizabeth City, 8,142; Fayetteville, 7,045; Gastonia, 5,759; Kinston, 6,995; Mount Airy, 3,844; New Bern, 9,961; Salisbury, 7,153; Statesville, 4,599; Tarboro, 4,129; Washington (N. C.), 6,211.

(3) *Writing 10,000.* How shall we write 10,000? Give the class a chance to write it for themselves. Have them numerate or read what they have written (beginning at the right) to make sure they have written accurately the number you called. Lead them to renew the steps taken in going from 10 to 100; from 100 to 1,000. Let them see they have been going by steps of tens each time, and each step taken was indicated by an additional zero or cipher.

(4) *Writing Numbers by 10,000's to 100,000.* Follow the method suggested for writing numbers by 1,000's to 9,000.

Have class read or numerate each number written that they may know for themselves whether they have written accurately the number called.

(5) *Writing Numbers from 10,000 to 99,000.* Follow the method suggested for writing numbers from 1,000 to 9,999.

### Suggestions

(1) If your class cannot do in two nights all the work outlined in Lessons I and II, be sure they clearly understand the work gone over.

(2) Avoid the mistake of going so slow that the interest of the class lags and the members drop out.

(3) Avoid the mistake of going so rapidly that the class cannot follow you, and become discouraged and drop out.

(4) Associate the numbers written with practical problems common in their daily work.

(5) *Accuracy, rapidity* and *neatness* of work should constantly be striven for.

(6) Develop self activity, self reliance in your pupils. Do not do for them what you can lead them to do for themselves.

(7) After taking your class through the work outlined in Lessons I and II they should have no difficulty in writing accurately and numerating correctly numbers to 100,000 or 1,000,000.

(8) Even if it should require three nights to do well the work outlined in Lessons I and II, we believe you would be justified in taking that much time to lay the foundation thoroughly before addition and subtraction are begun.

## LESSON III

(1) Rapid review of the most important steps taken in Lessons I and II.

(2) Fix thoroughly in the minds of your pupils the points most difficult for them to understand on the previous night.

### Addition Without "Carrying"

(A) *Adding Units and Tens.*

(1) Have a number of practical problems written down in your note book before you come to class, that illustrate the principle you wish to teach that night. Let these be problems that are common in the daily life and work of your pupils. For example, if one member of your class buys a primer for his little boy for 25 cents and a reader for his little girl for 32 cents, then have the class solve the problem to find the cost of both. Do not work this problem for the class. Give the members a chance to work it for themselves. If they do not know how to proceed, a question or two from you will probably set them to work along the right line. Let the class work this problem on their tablets or on the blackboard and without the use of splints if they can. But if the use of splints will make it clearer, then use the splints.

Have one member to state the problem. Let them see that units are written under units, that tens are written under tens. Have one member

to state the first step to be taken. In adding quantities where do we begin? Have another member of class to state the second step to be taken. Have another member to read the answer, calling the number of tens, and the number of ones or units. Give enough practical problems in adding units and tens to insure accuracy and rapidity in adding units and tens.

(2) Rapid drill on adding *units* and *tens:*

| | | | |
|---|---|---|---|
| 23 | 67 | 45 | 74. |
| 54 | 32 | 24 | 25 |

(B) *Adding Units, Tens and Hundreds.*

(1) A farmer pays $175 for a mule and $220 for a horse. How much does he pay for both? Have class work this problem, following method suggested in working the previous problem.

(2) On one ten-acre field a farmer raises 575 bushels of corn, and on another ten-acre field he raises 424 bushels. How many bushels of corn does he raise on both ten-acre fields?

(3) Rapid drill on adding *units, tens* and *hundreds:* Add:

| | | | |
|---|---|---|---|
| 375 | 898 | 658 | 948 |
| 224 | 101 | 241 | 151 |

(C) *Adding Units, Tens, Hundreds and Thousands.*

(1) A farmer pays $2,753 for one tract of land, and $1,325 for an adjoining farm. How much does he pay for both farms?

(2) A man pays $1,250 for a town lot and builds a house on it for $2,125. How much money does he pay for both? Have class work these problems on their tablets or blackboard, following the method suggested in adding *units* and *tens.*

(3) Rapid drill on adding *units, tens, hundreds* and *thousands:* Add:

| | | |
|---|---|---|
| 9842 | 3458 | 8265 |
| 1516 | 5441 | 1734 |

## LESSON IV

(1) Rapid review of writing and reading numbers to 1,000.

(2) Rapid review of writing and reading numbers from 1,000 to 10,000.

(3) Rapid review of writing and reading numbers from 10,000 to 100,000.

(4) Rapid review of adding *units* and *tens; units, tens* and *hundreds: units, tens, hundreds* and *thousands.*

### New Work

ADDITION WITH "CARRYING."

(A) *Adding Units and Tens.*

(1) A man pays $59 for a two-horse wagon and $19 for a set of harness. How much does he pay for both? Give the class a chance to work this for themselves, and without the use of splints. If they have difficulty in doing this, then have each member of class work out

this problem with splints, after which have them work it on their tablets, or blackboard.

Teacher: How many dollars did the farmer pay for his wagon? $59. How many tens in $59. 5 tens. How many ones? 9 ones. Hold up 5 tens and 9 ones of splints. Put your 5 tens of splints to your left on the desk. Put down your 9 splints or ones to your right.

How much did the harness cost? $19. How many tens in $19? How many ones or units over? What did we wish to find out? The cost of wagon and harness. How are you going to find out? Adding the cost of wagon and harness. Now that we have put down the cost of wagon represented in 5 tens and 9 ones of splints, hold up the number of splints representing the cost of the harness. Where shall we put this 1 ten and 9 splints? Now that we have 1 ten and 9 ones under 5 tens and 9 ones, what shall we say first? Where do we begin adding quantities? 9 ones and 9 ones, are how many ones? 18 ones. What shall we put down under "ones"? How many bundles with ten in a bundle can we get out of 18 ones? 1 ten. How many ones left over? What shall we do with these 8 "ones"? Put them down in ones place. What shall we do with the 1 ten? Carry it to tens place. What do you say next? 1 ten and 5 tens make 6 tens, and the 1 ten we brought over from the one's place makes 7 tens. Read your answer. How many tens? How many ones? If then the farmer paid $59 for his wagon and $19 for his harness, how much did both cost? Have class now work this problem on their tablets or on the blackboard without the use of splints.

(2) If a parent buys an arithmetic for 36 cents, and a grammar for problem on their tablets or on the blackboard without the use of splints. if they can. If they cannot, then use splints as suggested in the problem above.

(3) Rapid drill in adding *units* and *tens:* Add:

| | | | | |
|---|---|---|---|---|
| 65 | 58 | 48 | 68 | 78. |
| 29 | 29 | 49 | 28 | 19 |
| — | — | — | — | — |

(B) *Adding Units, Tens and Hundreds.*

(1) A farmer pays $175 apiece for a pair of mules. What does the pair cost him? Have class work this by themselves on their tablets without the use of splints if they can. But if it is too difficult, then have them work the problem with splints first, following the method suggested in finding the cost of the wagon and the harness. Then have class work problem on their tablets or on the blackboard.

(2) Rapid drill on adding *units, tens* and *hundreds:* Add:

| | | | | | | |
|---|---|---|---|---|---|---|
| 165 | 178 | 189 | 587 | 685 | 729 | 489 |
| 148 | 135 | 275 | 326 | 227 | 181 | 496 |
| ——— | ——— | ——— | ——— | ——— | ——— | ——— |

(C) *Adding Units, Tens, Hundreds and Thousands.*

(1) If a farmer raises 1,675 pounds of tobacco on one piece of land, and 2,898 pounds on another piece, how many pounds of tobacco does he raise on both pieces of land? Let class work this for themselves on their tablets without the use of splints if they can. But if it is too difficult, then have them work it first with splints, and afterwards with figures on the board or on their tablets.

(2) Rapid drill on adding *units, tens, hundreds* and *thousands:* Add:

| | | | |
|---|---|---|---|
| 2685 | 4898 | 8769 | 9899 |
| 7896 | 7659 | 6538 | 1999 |

## LESSON V

(1) Rapid review of writing and reading numbers from 1,000 to 10,000; from 10,000 to 100,000.

(2) Rapid drill on adding *units* and *tens; units, tens* and *hundreds; units, tens, hundreds* and *thousands,* without "carrying."

(3) Rapid drill on adding *units* and *tens; units, tens* and *hundreds; units, tens, hundreds* and *thousands,* with "carrying."

(4) Let this review be spirited. It should not require more than twenty minutes to make the review called for above, if you have carefully fixed in the minds of the pupils each step taken.

(5) Insist upon *accuracy, rapidity,* and *neatness* of work in this review.

### New Work

SUBTRACTION WITHOUT "BORROWING."

(A) *Subtracting Units and Tens.*

(1) If one of you had $78 in the bank and took out $52, how much money would you have left in the bank? Have class work this problem for themselves on their tablets without the use of splints, if they can. But if they do not understand how to work it without splints, then have them work it first using the splints, and then have each one work it out on his tablet, using figures.

Teacher: How many dollars have you in the bank? $78. How many ten dollar bills in $78? 7. How many one dollars over? 8. How many dollars did he take out? $52. How many ten dollar bills in $52? 5. How many one dollars over? 2. Hold up the number of tens and ones of splints, representing the amount John had in the bank. How many one dollars did John take out of his 8 dollars? 2. Do this. How many ones of dollars have you left? 6. How many tens of dollars has John in bank? 7 tens. How many tens did he take out? 5 tens. Do this. How many tens of dollars has John in bank now? How many *tens* and *ones* of dollars has he now left in bank? 2 tens and 6 ones. How many dollars in 2 tens and 6 ones? 26 dollars. Now work this problem with figures on your tablets.

How many dollars did John have in bank? $78. Write this. How many dollars did he take out? $52. Where do you write this $52? How are you going to find out how many dollars he had left after taking out $52? By subtraction. Where do you begin when you add quantities? Where are you going to begin in subtracting quantities? What do you say first? 2 ones from 8 ones leave 6 ones. What do you say next? 5 tens from 7 tens leave 2 tens. Read your answer. $26.

(2) Rapid drill on subtracting *units* and *tens* from *units* and *tens:*

| Subtract: | | | | | | |
|---|---|---|---|---|---|---|
| | 98 | 96 | 89 | 65 | 75 | 49 |
| | 52 | 43 | 55 | 32 | 25 | 27 |

(B) *Subtracting Units, Tens and Hundreds from Units, Tens and Hundreds.*

(1) A man having $878 in the bank buys a town lot for $522. How much money does he have left in the bank?

Have class work this on their tablets for themselves without the use of splints if they can. But if this seems too difficult, then use splints first, following the method suggested above in subtracting *units* and *tens* from *units* and *tens.*

(2) Rapid drill on subtracting *units, tens* and *hundreds* from *units, tens* and *hundreds:* Subtract:

| | | |
|---|---|---|
| 989 | 878 | 999. |
| 375 | 667 | 899 |

(C) *Subtracting Units, Tens, Hundreds and Thousands from Units, Tens, Hundreds and Thousands.*

(1) If Tom pays $7,888 for one piece of land, and $5,222 for another piece of land, how much more money does he pay for the first piece of land than he pays for the second piece?

If you have carefully fixed in the minds of your pupils each step gone over before taking up the next step, then your class should have no difficulty in working the above problem without the use of splints. Give them a trial without splints, but if the use of splints is necessary to a clear understanding of the process, don't hesitate to use splints.

(2) Rapid drill on subtracting *units, tens, hundreds* and *thousands* from *units, tens, hundreds* and *thousands:* Subtract:

| | | | |
|---|---|---|---|
| 6785 | 7876 | 8987 | 9899 |
| 4473 | 6754 | 6765 | 8789 |

## LESSON VI

(1) Short and rapid review of writing and reading numbers from 10,000 to 100,000, to 1,000,000.

(2) Short and rapid drill in adding *units* and *tens; units, tens* and *hundreds; units, tens, hundreds* and *thousands,* without "carrying."

(3) Short and rapid drill in adding *units* and *tens; units, tens* and *hundreds; units, tens, hundreds* and *thousands,* with "carrying."

(4) Short and rapid drill in subtracting *units* and *tens; units, tens,* and *hundreds; units, tens, hundreds* and *thousands,* without "borrowing."

(5) In this review insist upon *accuracy, rapidity* and *neatness* in work.

(6) Do not let this review drag. Make it spirited and interesting.

(7) If each step taken has been thoroughly grasped by your class, then it should not require more than twenty or twenty-five minutes to make the review called for above.

### New Work

SUBTRACTION WITH "BORROWING"

(A) *Subtracting Units and Tens from Units and Tens.*

(1) If one of you have $78 in the bank and buy a two-horse wagon for $59, how much money will you have left in bank?

Give the class a chance to work this out for themselves on their tablets without the use of splints, if they can. But if the process of "borrowing" now brought in for the first time, seems difficult for them to grasp, have class work it first with splints, and then have them work it on their tablets using figures.

Teacher: How much money did you have in bank? $78. How many tens and ones in $78? 7 tens and 8 ones. Hold up the number of tens and ones of splints representing the amount of money you had in bank. How many dollars did you take out of the bank to pay for the wagon? $59. What do you want to know? The amount you have left. How shall we find out? Subtract $59 from $78. In your 7 tens and 8 ones of splints that represent the amount of money you had in bank, how many ones have you? 8 ones. In the $59 you paid for the wagon how many ones have you? 9 ones. Can you take out 9 ones when you have but 8 ones? What are you going to do. Borrow one of your tens from your 7 tens, remove the rubber band, break this ten bundle into ones, and put these ten ones over in ones place with your 8 ones. How many ones will you then have in ones place? 18 ones. Do this. Can you take 9 ones from 18 ones? Do this. How many ones will that leave you in ones place? 9 ones. When you borrowed the one ten from your 7 tens to put in ones place, how many tens did you then have in tens place? 6 tens. What do you say next? 5 tens from 6 tens leave how many tens? 1 ten. How many tens and ones have you left? 1 ten and 9 ones, or 19. How many dollars have you left, after paying out $59 for a wagon? $19.

Now work this on your tablets. How any dollars did you have in bank? $78. Write this. How many dollars did you pay for the wagon? $59. Where shall we write the $59? We can write our problem thus: $78. What do we want to know? How much money you

—$59

had left. How shall we find out. Subtract $59, what you paid for the wagon, from $78, the amount you had in the bank. Where do we begin in subtraction? With units. What shall we say first? 9 ones from 8 ones; but we found we cannot take 9 ones from 8 ones, so what did we do with our splints in order to subtract 9 ones from 8 ones? Borrowed 1 ten bundle from our 7 tens, broke it up into ones, and put these ten ones over into ones place with out 8 ones. How many ones have we now in ones place? 18 ones. Now what do you say? 9 ones from 18 ones leave 9 ones. What do you do? Put down the 9 ones left in ones place. We may represent what we do thus:

$$\begin{array}{r} 6\ 10 \\ \$7\ 8 \\ -\$5\ 9 \\ \hline \$1\ 9 \end{array}$$

How many tens did you have left when you borrowed 1 ten from your 7 tens? 6 tens. What do you say next? 5 tens from 6 tens leaves 1 ten. What do you do now? Put down the 1 ten left, in tens place. Read your answer. How many tens left? 1 ten. How many ones left? 9

ones. How many dollars left out of your $78 when you buy a wagon for $59? $19.

(2) Rapid drill in subtracting *units and tens:* Subtract:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 58 | 61 | 75 | 77 | 84 | 92 | 93 | 97 | 98 |
| 29 | 28 | 28 | 49 | 36 | 75 | 66 | 58 | 49 |

(B) *Subtracting Units, Tens and Hundreds from Units, Tens and Hundreds.*

(1) Brown has $788 but buys a town lot for $599. How much money does he have left in bank? Have class work this on their tablets without the use of splints if they can. If they cannot, have them work it first with the use of splints, following the method suggested in working the problem above.

(2) Rapid drill in subtracting *units, tens* and *hundreds:* Subtract:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 688 | 728 | 812 | 922 | 925 | 917 | 952 | 900 |
| 499 | 599 | 675 | 784 | 786 | 798 | 798 | 899 |

(C) *Subtracting Units, Tens, Hundreds and Thousands from Units, Tens, Hundreds and Thousands.*

(1) A farmer having $7,888, buys a farm for $5,999. How much money has he left for equipment?

The class should be able to work this problem without the use of splints, if you have carefully followed this outline. Give them a chance to work this for themselves without splints. But if the use of splints is necessary to a clear understanding of the process, don't hesitate to use splints.

(2) If the population of Elizabeth City in 1910 was 8,142, and the population of Fayetteville was 7,045, how many more people lived in Elizabeth City than in Fayetteville?

If the population of Kinston in 1910 was 6,995 and the population of Washington (N. C.), was 6,211, how many more people lived in Kinston than in Washington?

In 1910 the population of Asheville was 18,762, and the population of Raleigh was 19,218. How many more people lived in Raleigh than in Asheville?

(3) Rapid drill in subtracting *units, tens, hundreds* and *thousands:*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Subtract: | 5888 | 6888 | 8888 | 9225 | 9754 | 9275 | 9000 |
| | 3999 | 4999 | 5999 | 4896 | 6896 | 7899 | 8999 |

## LESSON VII

(1) Short and rapid review of writing and reading numbers from 1,000 to 10,000; from 10,000 to 100,000, to 1,000,000.

(2) Short and rapid drill in adding short columns of figures, of units and tens; of units, tens and hundreds; of units, tens, hundreds and thousands.

(3) Short and rapid drill in subtracting units and tens; units, tens and hundreds; units, tens, hundreds and thousands, *without "borrowing."*

(4) Short and rapid drill in subtracting units and tens; units, tens and hundreds; units, tens, hundreds and thousands, *with "borrowing."*

(5) Make this review spirited. Create an atmosphere of enthusiasm and friendly competition in *accuracy, rapidity* and *neatness* of work.

(6) Twenty or twenty-five minutes should be sufficient to do well the review work called for above. If you have followed the outline of work closely it may not require more than fifteen or twenty minutes to make the review.

(7) But be sure the work in writing and reading numbers in addition and subtraction is thoroughly grasped by the class before taking up the subject of multiplication.

**New Work**

MULTIPLICATION

(1) Call attention to processes already studied. Do not leave the class to feel that in multiplication they are taking up a subject entirely unrelated to the work in arithmetic they have already been doing.

Teacher: What have we been doing with quantities during the past few lessons? Adding and subtracting quantities. Tonight we are going to take up another subject in arithmetic. What is it? Multiplication.

(2) As a preparation for this new work it may be well to spend a few minutes in having class count by 10's to 100; by 5's to 100; by 2's to 100.

(3) Oral problems. If corn is selling for $5 a barrel, how much will 3 barrels bring? 5 barrels? 6 barrels? 7 barrels? etc. If one 500-pound bale of cotton brings $50, how much money will 5 500-pound bales bring? If you buy 5 acres of land at $60 an acre, how much money will you have to pay?

(A) *Multiplying Quantities by One Figure.*

(1) If a farmer buys a pair of mules at $144 apiece, how much does he pay for the pair?

How shall we find out how much he paid for both mules? Multiply $144 by 2. How would you show what we want to do, with figures? We can write it thus:

$144 \times 2$, or $144$
$\times 2$

In multiplying $144 by 2, where shall we begin? With what did we begin in addition and subtraction? With units. With what shall we begin in multiplication? Units. What shall we say first? 4 ones multiplied by 2, or 2 times 4 ones are 8 ones. Where shall we write the 8 ones? In ones place. What do we say next? 4 tens multiplied by 2, or 2 times 4 tens are 8 tens. Where do we write the 8 tens? In tens place. What do we say next? 2 times one hundred are 2 hundred. Where do we write the 2 hundred? In hundreds place. Read your answer. Two hundred, eight tens, and eight ones, or $288. What was our problem? How did you find what the mules brought? What did you say first? second? third?

(2) Short and rapid drill in multiplying quantities by one figure.

| Multiply: | 124 | 134 | 143 | 111 | 122 | 133 | 121 | 122 | 111 | 125 | 135 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ×2 | ×2 | ×2 | ×3 | ×3 | ×3 | ×4 | ×4 | ×5 | ×2 | ×2 |
| | — | — | — | — | — | — | — | — | — | — | — |

| 145 | 136 | 125 | 127 | 128 | 119 |
|---|---|---|---|---|---|
| ×2 | ×2 | ×3 | ×3 | ×4 | ×5 |
| — | — | — | — | — | — |

(3) Assign for the following night the first ten lines of the multiplication table.

## LESSON VIII

(1) Short and rapid drill in adding short columns of figures of units and tens; of units, tens and hundreds; of units, tens, hundreds and thousands.

(2) Short and rapid drill in subtracting units and tens; units, tens and hundreds; units, tens, hundreds and thousands.

(3) Short and rapid drill on the first ten lines of the multiplication table.

(4) Short and rapid drill in multiplying quantities by any figure from 1 to 9.

(5) Fifteen or twenty minutes should be sufficient to make the review called for above.

### New Work

(A) *Written Work—Multiplying by 10.*

(1) If one barrel of corn is worth $5, how much will 10 barrels bring? If a barrel of flour cost $7, what will 10 barrels cost?

Work these on your tablet. Look over the first problem you have written out. Read your answer. What figure after the $5 changed it to $50? Zero. Read your answer in the second problem. What figure after the $7 changed it to $70? In multiplying 5, and 7, by 10, what figure did you add to your $5, to your $7? What figure do you always add to the number you multiply, or the multiplicand, in multiplying it by 10.

(2) Short and rapid drill in multiplying quantities by 10. Multiply:

$7 \times 10$; $8 \times 10$; $9 \times 10$; $17 \times 10$; $18 \times 10$; $19 \times 10$; $117 \times 10$; $118 \times 10$; $119 \times 10$; $127 \times 10$; $128 \times 10$; $136 \times 10$.

(B) *Multiply Quantities by 100.*

(1) What will a farm of 175 acres cost at $100 an acre?

If your class thoroughly understands how to multiply any quantity by 10 it will not be difficult for them to see that in multiplying a quantity by 100, you simply add two ciphers to the multiplicand.

(2) Short and rapid drill in multiplying quantities by 100. Multiply: $185 \times 100$; $195 \times 100$; $275 \times 100$; $375 \times 100$; $875 \times 100$; $975 \times 100$.

(C) *Multiplying Quantities by 1,000.*

(1) Rapid drill in multiplying quantities by 1,000. Multiply: $2{,}785 \times 1{,}000$; $3{,}895 \times 1{,}000$; $5{,}898 \times 1{,}000$; $9{,}875 \times 1{,}000$.

If your pupils clearly understand how to multiply quantities by any figure to 9, and how to multiply quantities by 10, 100 or 1,000, it should not be difficult for them to understand how to multiply quantities by *units* and *tens*.

(D) *Multiplying Quantities by Units and Tens.*

(1) If a farmer buys a farm of 69 acres at $33 an acre, how much does the farm cost him? How can you show this on your tablet or blackboard? Instead of writing $33 × 69, we write it thus:

$33
×69

What is our first multiplier? What do we say first? How many tens in 27 units? How many ones over? Where do we write the ones? What shall we do with our 2 tens? What do we say next? What larger unit in 29 tens? How many hundreds? How many tens over? Where do you write the tens? Where the hundreds? Read the number of hundreds, tens, and ones you get in multiplying $33 by 9. How many ones or units in 2 hundred, 9 tens and 7 ones?

$33
×69

(1) 9 times $33 = $297.

What is our next multiplier? What do you say first? Where do you write it? What do you say next? Where do you write it? When we multiply $33 by 6 tens, how many tens do we have? We can write our second step thus:

$33
×69

(1) 9 times $33 = 297 ones.
(2) 6 tens times $33 = 198 tens.

How can we change our 198 tens to units? How many units in 1 ten? How many in 198 tens? What change do we make in the multiplicand in multiplying it by 10? What do we get when we do that? We can now write out all that we have done thus:

$33
×69

(1) 9 times $33 = $297 or ones.
(2) 6 tens times $33 = $1,980 or ones.
(3) 69 times $33 = $2,277 or ones.

How much money then does a farm of 69 acres, at $33 an acre, cost?

(2) Short and rapid drill in multiplying quantities by units and tens. Multiply: 25 × 12; 26 × 22; 46 × 44; 58 × 55; 66 × 66; 79 × 59; 89 × 89; 99 × 99.

For a helpful suggestion in multiplying a quantity by 10, or multiple of ten, and by units and tens, see Milne's Progressive Arithmetic, Book I. pages 132-137; 172-174.

(E) *Multiplying Quantities by Units, Tens and Hundreds.*

If class clearly understands how to multiply quantities by units, by units and tens, they are ready to take up the multiplication of quantities by units, tens and hundreds.

(1) A farm of 125 acres sold for $115 an acre. How much did the farm bring?

(2) Drill on multiplying quantities by units, tens and hundreds. Multiply: 125 × 112; 145 × 113; 165 × 114; 185 × 115; 195 × 116; 125 × 212; 145 × 213; 365 × 214; 895 × 334.

## LESSON IX

(1) Review multiplying quantities by one figure. Such as:

(*a*) A man grows 2 bales of cotton on 1 acre. How many bales could be grown on 4 such acres? 4 multiplied by 2 equals how many? 4 times 2 = ? 4 × 2 = 8. 2 × 4 = 8.

(*b*) Teach the inverse problem: If 8 bales of cotton can be grown on 4 acres, how many bales will 1 acre produce? How do we work this? Is this problem to be worked by a new process? Have we had anything like it before in our class? We will see.

NOTE.—If the class can work this orally give several other simple problems like it calling for quick answers. Begin each problem with the multiplication idea, then give the inverse, but do not call the process division now unless some members of the class do. In that case make some appropriate comment on the ability of class members to grasp new principles in arithmetic.

(*c*) Drill: 2 times 4 = ? 4 times 2 = ? In 8 there are how many 2's? In 8 there are how many 4's? 3 × 4 = ? 4 × 3 = ? 12 ÷ 3 = ? 12 ÷ 4 = ? How many 3's in 12? How many 4's in 12? 4 × 4 = ? 4 × 5 = ? In 20 there are how many 5's. How many 4's? 20 ÷ 5 = ? 20 ÷ 4 = ?

NOTE.—Press this rapid combination multiplication-division drill until the class begins to grasp the division idea—to see that it is the inverse of multiplication.

(2) *Short Division.* Dividing quantities by one figure, with all even numbers and no remainders: A farmer sold 2 young horses for $424. What was the value of each? Does this problem mean that the farmer received one-half of $424 for each of his young horses? How shall we write this problem to work it on tablet or blackboard? Sometimes such problems are written this way: $424 ÷ 2; but we can work it better by writing it thus:

2 ) $424
$212

Here we have 4 hundreds, 2 tens and 4 ones to be divided by 2. Where shall we begin? What is the 2 called? Divisor. What is the 424 called. Dividend. 2 is contained in 4 hundreds, 2 hundred times. Write 2 under the 4 hundreds. 2 is contained in 2 tens 1 ten times. Write 1 under the 2 tens. 2 is contained in 4 ones 2 ones times. Write 2 under the 4 ones. What then is your answer? $212. How much did the farmer receive for each of his young horses? Explain how you worked this problem.

Drill: 846 ÷ 2; 688 ÷ 4; 6846 ÷ 2. Apply these figures to local values and work each problem, requiring the class to explain each step.

## LESSON X

(1) Review "carrying" in addition. Use a few familiar examples to illustrate the principle.

(2) Review "borrowing" in subtraction. Subtract 2345 from 3236; 678 from 965; 8956 — 7987. Write these on the board and have class work on their tablets.

(3) Review multiplying units, tens and hundreds—and units, tens, hundreds and thousands—by units and tens. $345 \times 24$; $728 \times 36$; $3422 \times 27$.

(4) Review first lesson in short division—all even numbers and no remainders. $2 \times 4 = ?$ $4 \times 2 = ?$ $\frac{1}{2}$ of $4 = ?$ $4 \div 2 = ?$ $2\,)\,4 = ?$

### New Work

(5) *Short Division.* Dividing quantities by one figure, using both even and odd numbers, and dividends that will show remainders.

A farmer sowed 275 bushels of oats and sowed 2 bushels per acre. How many acres did he sow? Shall we multiply or divide to find the number of acres? Work this on tablets and on the blackboard. Have we had a form for working problems in division? What is it?

$2\,)\,275$

$137\frac{1}{2}$ acres

Divide: 2 is contained in 2 hundreds 1 hundred times. Write 1 in the hundreds place under the 2 hundreds. 2 is not contained in 7 tens an even number of times. What do we do? 2 is contained in 7 tens 3 tens times and 1 ten over. Write 3 in the tens place under the 7 tens. Now we have 1 ten over and the 5 ones to be added and divided by 2. How many ones in 1 ten and 5 ones? 15. 2 is contained in 15 ones 7 times with 1 over. Write the 7 in the ones place under the 5 ones. What can we do with the 1 one left over? What is it, anyway? 1 bushel of oats. How many bushels were sowed on 1 acre? 2. Then what part of an acre will 1 bushel sow? $\frac{1}{2}$ an acre. Write the $\frac{1}{2}$ at the right of the 7 ones.

How many acres did the farmer sow in oats? $137\frac{1}{2}$. Ask some member of the class to explain this problem from the blackboard. Call for volunteers.

Last year 8 tomato club girls put up 5768 cans of tomatoes. If each girl put up the same number of cans, how many did each can? Work this on tablets and blackboard. Explain carefully the first step: that 8 is not contained in the first figure, 5, but that you must use the first two figures in the dividend, 57. Then proceed with the problem as in the preceding one.

NOTE.—You will probably find that many in the class can solve these problems "in their head" as they say, and will hesitate to work them out on paper. In that event suggest that it is well to work them on paper so each one will learn the written process, and by practice will be able later to work more difficult problems and many such which are too long and complicated to be "worked in their heads."

If there is time enough give several similar problems based on community interests and activities.

(6) *Short Division.* Dividing quantities by 10 or a multiple of 10. If 10 horses eat 550 lbs. of hay a week, how many lbs. will 1 horse eat?

$$10 \overline{)\ 550}\ 55$$

This example has 1 ten as a divisor and 55 tens as a dividend. Then cut off, or cancel, the last figure, which is zero in each case, and divide. $55 \div 1 = 55$. The quotient is 55 lbs. of hay each week for each horse.

Divide: 20 ) 860; 30 ) 930; 50 ) 1050. Drill on like examples.

## LESSON XI

(1) Brief review, again, of "carrying" in addition and "borrowing" in subtraction.

(2) Give a brief drill on short division with even numbers, odd numbers, remainders in fractional forms, and the like.

(3) Drill on dividing quantities by 10 and multiples of 10.

In all our division so far we have used only one figure as a divisor. Do we ever need to use more than one figure as divisor? We do. We must use a longer form in longer problems. Then we call the new form what? *Long Division.*

(4) *Dividing by Units and Tens.*

If 21 members of a Farmers' Union sold their potatoes together for $2,583, how much was the equal share of each?

Can you work this on your tablets? To work this problem let us write it thus:

```
    $123
21 ) $2583
     21
     48
     42
      63
      63
```

First. Divide: We see that the 25 in the dividend contains 21, the divisor, 1 time with a remainder.

Second. Write quotient figure 1 above 5 in the dividend.

Third. Multiply 21 in the divisor by 1 in the quotient and write the product under 25 in the dividend.

Fourth. Subtract the 21 from 25. We find the remainder to be 4.

Fifth. Bring down the next figure in the dividend, 8. What is 48? A new dividend. Proceed with this as you did in the case of the 25. 21 is contained in 48 twice with a remainder. Write the 2 in the quotient over 8. Multiply 21 by 2, and write the product under 48. Subtract, and bring down the next figure in the quotient, 3. Is 63 a new dividend? How now shall we proceed? Members of the class will probably suggest that 21 is contained in 63, 3 times, and tell you to write 3 in the quotient above 3 in the dividend, then to multiply 21 by 3 and write the product under 63. Are there any other steps to take? Is the problem solved? If so, what is the answer? How much money did each man receive for his potatoes?

Give several other problems of local interest. Let them include fractions in the quotients.

(5) *Dividing by Units, Tens and Hundreds.*

If a man raises 97,356 pounds of lint cotton on 244 acres of land, what is the average yield on each acre?

Work this on blackboard and on tablets. If the class understands the preceding problems, this can be worked with a little help from the teacher.

NOTE.—Be sure to impress upon the class the *five* formal steps in dividing in long division. Call attention to the fact that long division includes drill in subtraction and multiplication.

## LESSON XII

NOTE.—Lesson XII is divided into three distinct sections. You may be able to use only one section—the one which, in your judgment, is best adapted to your class at this time, or you may have time to use two sections, or all three, as your judgment dictates.

(1) Discuss and review rapidly with the class the four fundamental operations which have been studied in the preceding lessons. If you think it best you might do well to spend all the time for this lesson on this section. In that event prepare in advance a number of simple problems involving the four processes, and drill, drill, drill on these so the class can tell quickly by the statement of the problem or the sign given what process is to be used. Incidentally you could have the problems you use include some fractions and money calculations.

(2) Introduce a few fractional forms—those most likely to be used in the homes of the community.

(*a*) Discuss fractions, define, and give illustrations of their usefulness in everyday life. Teach how to write fractions: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$, etc. If necessary teach these by using objects, or drawings on the blackboard.

(*b*) A lady in town ordered 1 bushel of tomatoes from a gardener, agreeing to pay \$1.40 for them. The gardener could deliver only $\frac{3}{4}$ of a bushel. What were they worth?

How many pecks in a bushel? What part of a bushel is a peck? How many fourths then in a bushel?

If $\frac{4}{4}$ or a whole bushel cost \$1.40,
$\frac{1}{4}$ of a bushel, or 1 peck, would cost $\frac{1}{4}$ of \$1.40 = \$ .35.
If $\frac{1}{4}$ bushel cost \$.35,
Then $\frac{3}{4}$ bushel would cost \$.35 $\times$ 3 = \$1.05.

How much, then, did the gardener receive?

(*c*) If a farm contains 275 acres, and $\frac{4}{5}$ of it is in cultivation, how many acres are in cultivation?

State the problem clearly. What do you want to know? Is $\frac{4}{5}$ more or less than the whole farm? How many fifths in the whole farm? In any whole object? Illustrate by drawing on the blackboard, or with a string. How shall we work this? There is 1 farm. In any whole thing there are five-fifths—$\frac{5}{5}$.

If $\frac{5}{5}$ = the whole farm of 275 acres,
$\frac{1}{5} = \frac{1}{5}$ of 275 acres = 55 acres,
$\frac{1}{5}$ = 55 acres.
Then $\frac{4}{5}$ = 55 $\times$ 4 = 220 acres.

118174

(*d*) Drill on fractions, such as:

If ½ my land is 25 acres, how much land have 1? If ⅔ = 40, what will ⅗ be? ¼ = 10, find ¾, etc.

(3) Give a few problems in United States money, showing how to add, subtract, multiply and divide dollars and cents.

(*a*) Suppose four men gave you money as follows: $250.16, $440.32, $850.06, $325.91. How much would you then have? How shall we work this? Just as we did in addition, being careful to put dollars under dollars and cents under cents. The little dot or period between the dollars and cents is called the decimal point and is used to show the division between whole things and parts—such as dollars and parts of dollars.

(*b*) A farmer sold 452.25 bushels of peas at $2.25 a bushel. How much did he receive for them.

NOTE.—For the method to be employed in multiplying quantities by units, tens and hundreds see Lesson VIII. However, in the problem above it will, of course, be necessary to explain that the class in working the problem must point off in the product to the right of the decimal point as many figures as there are to the right of the decimal point in both the multiplicand and the multiplier.

(*c*) If a land dealer sold 9.5 acres of land for $459.35, how much did he receive for 1 acre?

NOTE.—The method for solving this problem will be found in Lesson XI. Teach how to deal with the decimal point. The class must point off in the quotient to the right of the decimal point as many figures as the figures to the right of the decimal point in the dividend exceed, or are more than, those to the right of the decimal point in the divisor.

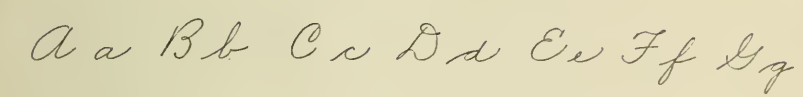
(*d*) Drill. If you can do so, give a number of simple problems based upon community interests. Drill especially on money problems involving multiplication and division.

Aa Bb Cc Dd Ee Ff Gg

Hh Ii Jj Kk Ll Mm Nn

Oo Pp Qq Rr Ss Tt Uu

Vv Ww Xx Yy Zz



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